Topic 32 – Ultrasounds, cardiovascular imaging

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0271

Predictive factors and prognostic value of myocardial viability in cardiac magnetic resonance imaging and impact of revascularization therapy through 121 cases

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The purpose of this study is to evaluate predictive factor and the impact of myocardial viability assessment by cardiac magnetic resonance imaging (CMRI) and of revascularization therapy in 121 patients with coronary artery disease (CAD). Between September 2009 and August 2014, we collected 121patients followed up for chronic ischemic heart disease or myocardial infarction (MI). We conducted a descriptive study of echocardiographic and CMRI data. Transmurality is analyzed semi-quantitatively. Alone were considered viable segments having a transmurality less than 50%. Predictive factors of myocardial viability in cardiac magnetic resonance imaging was sought in univariate then multivariate analysis: only angina recurrences was purveyor of presence of viability (p=0.02) and ventricular tachycardia (p=0.001), apical thrombus (p=0,01), apical dyskinésia (p=0.02), restrictive mitral flow (0.01), The left ventricular end-diastolic diameter>70mm (p<0.0001) and ejection fraction <25% (p<0.0001) were in favor of lack of viability. 46% of patients had a delayed contrast enhancement <50% showing presence of myocardial viability, whose 41.6% in the suites of an MI and 58.4% with chronic ischemic LV dysfunction. 38% of patients underwent surgical revascularization and angioplasty in 62%. After a mean follow-up of approximately one year, we have 28% of disappearance of angina recurrences, Heart failure requiring hospital admission is decreased in 36% and the LVEF is improved between 5 and 15% in 22%. With the increase in the prevalence of ischemic heart disease, myocardial hibernation research and prediction of functional recovery after revascularization are important to clarify. CMRI remains the gold standard for prognostic stratification.

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Right ventricular systolic strain evolution during peri-operative management of congenital heart diseases

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Background: RV systolic strain evolution during peri-operative management of congenital heart diseases (CHD) is unknown.

Methods: In this prospective study, RV peak systolic strain (PSS) was measured using 2D speckle tracking echocardiography (Qlab10.0 software, Philips) in 39 children undergoing surgery of a CHD (Median age: 17 months, min 6 day-old, max 14.3 year-old). Three measures were performed the day before surgery, few hours after the surgery and before discharge and compared to conventional echocardiographic parameters of RV and left ventricular (LV) function. The relationships between the evolution of RV-PSS, peri-operative parameters and the type of CHD were assessed.

Results: Mean RV-PSS at baseline was –19.5±4.8. RV-PSS was moderately correlated with the heart rate (r=0.49), the LV Tmad (r= –0.48), the TAPSE (r= –0.54) and the tricuspid S' wave (r= –0.44)(all p<0.05). RV-PSS was decreased in cyanotic CHD (p<0.05), in children with congestive symptoms (p=0.01) and increased in ASD (p=0.02). RV-PSS was higher in RV volume increased condition such as ASD than in RV pressure increased condition such as Fallot tetralogy (p=0.006). RV-PSS decreased after surgery (p<0.0001). Mean difference between pre- and post-operative RV-PSS was 7.5±4.4. The difference was correlated with initial RV-PSS (r= –0.80), the weight (r=0.54), the ultrafiltration rate (r=0.43)(all p<0.05) but not with the duration of aortic clamp, the duration of extracorporeal circulation, the troponin peak level nor the lactates peak level. A higher difference was associated with a shorter duration of mechanical ventilation (p=0.04) and a shorter stay in intensive care unit (P=0.03). RV-PSS was better at discharge (median 6 days, p=0.0009) but remained lesser than at the initial exam (p<0.0001).

Conclusion: RV-PSS decrease after surgery of CHD. This decrease seems mainly related to loading condition rather than to RV contractility given its relationship with a faster post-operative evolution.

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Contribution of transthoracic echocardiography in chronic hemodialysis

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Introduction: Chronic renal failure is associated with a so-called uremic cardiomyopathy, combining morphological abnormalities and ventricular systolic and diastolic cardiac dysfunction, found in 70 to 80% of hemodialysis patients. The diagnosis of various cardiac abnormalities is an important step to identify patients at high cardiovascular risk.

Objectives: Describe the different echocardiographic abnormalities in hemodialysis patients and identify predictive echocardiographic parameters of death in hemodialysis.

Methods: A retrospective study conducted on 92 patients undergoing hemodialysis at dialysis center of UH Ibn Rochd of Casablanca, between January 2012 and May 2014. All patients underwent transthoracic echocardiographic study.

Results: The average age of our population was 51.76 ± 14.85 years. It was composed of 49 women and 43 men with a sex ratio of 0.88.The indeterminate nephropathy was the main etiology of CRF (35.9 %). The duration of dialysis was on average 5.26 ± 4.34 years. In our population, 40.2 % had a dilated LV, 33.7 % had systolic dysfunction and 12% had elevated filling pressures. Fourteen percent of patients had pericardial effusion, 48.9 % had valvular calcification, 16.3 % had aortic stenosis, 25% had PAH and 5.4 % had systolic right ventricular dysfunction. In univariate analysis: Patients who died were older (p = 0.03). They had a dilated left atrium (p = 0.02), a thicker wall post (0.01), an E / Ea ratio higher (0.007), a dilated RV (0.04), an IVC more dilated (p = 0.02) and a higher SPAP (p = 0.07). None of the surviving patients had an E / Ea ratio> 15. In multivariate analysis, only the expansion of the IVC patients receiving hemodialysis were identified as independent parameter mortality (p = 0.029).

Conclusion: Cardiac Doppler ultrasound has become not only a diagnostic tool but also a means of evaluating the effectiveness of dialysis and prognosis necessary for management of chronic hemodialysis.

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The study of diastolic function in chronic hemodialysis

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Introduction: The left diastolic ventricular dysfunction was frequently found in patients with chronic renal fealure. Abnormalities of diastolic function were detected in 50% to 60% of hemodialysis patients.

Objects: Describe the prevalence of abnormalities in left diastolic ventricular function in our population and to identify predictors of this heart defect.